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REMARKS

The added claims are believed to be supported by the original specification. An examination on the merits is requested. A separate Fee transmittal sheet is enclosed.

Respectfully submitted,

Date: December 13, 2001

Paul E. Dietze (Reg. No. 45,627)
For: Marcia H. Sundeen (Reg. No. 30,893)
PENNIE & EDMONDS LLP
1667 K Street, N.W. – Suite 1000
Washington, D.C. 20006
(202) 496-4400

Enclosure

APPENDIX A
Clean Copy of Pending claim after Preliminary Amendment

1. (Original) An electrophoresis separation medium comprising a gel matrix of at least one random, linear copolymer comprising a primary comonomer and at least one secondary comonomer, wherein the comonomers are randomly distributed along the copolymer chain, wherein

the primary comonomer is acrylamide, and

the at least one secondary comonomer comprises one from the group consisting of vinyl monomers, monomers of acrylamide derivatives, monomers of acryloyl derivatives, monomers of acrylic acid derivatives, monomers of polyoxides, monomers of polysilanes, monomers of polyethers, monomers of derivatized polyethylene glycols, monomers of cellulose compounds, or mixtures thereof, each having between 2-24 carbon atoms.

2. (Original) The electrophoresis separation medium of claim 1, wherein the primary comonomer is acrylamide and the at least one secondary comonomer is dimethylacrylamide.

3. (Original) The electrophoresis separation medium of claim 1, wherein the ratio of reactivity of the at least one secondary comonomer to said primary comonomer is between 0.3 and 2.0.

4. (Original) The electrophoresis separation medium of claim 1, wherein said gel matrix further comprises a buffer having a pH between 5 and 11.

5. (Original) The electrophoresis separation medium of claim 1, wherein said gel matrix has a viscosity between 100 and 50,000 Cp.

6. (Original) The electrophoresis separation medium of claim 1, wherein said at least one linear random copolymer has a molecular weight between 100,000 and 5,000,000 Daltons.

7. (Original) The method of claim 1, wherein said at least one secondary comonomer imparts one or more of hydrophilicity, hydrophobicity, copolymer chain backbone stiffness, self coating properties, stability of copolymer entanglement structure, resistance to hydrolysis, processivity of copolymer chain extension, gel matrix viscosity, affinity of the copolymer to the surface of a supporting substrate, or chirality.

8. (Original) A method of preparing an electrophoresis separation medium comprising a gel matrix of at least one random, linear copolymer comprising a primary comonomer and at least one secondary comonomer, wherein the comonomers are randomly distributed along the copolymer chain, wherein the primary comonomer is acrylamide and the at least one secondary comonomer comprises one from the group consisting of vinyl monomers, monomers of acrylamide derivatives, monomers of acryloyl derivatives, monomers of acrylic acid derivatives, monomers of polyoxides, monomers of polysilanes, monomers of polyethers, monomers of derivatized polyethylene glycols, monomers of cellulose compounds, or mixtures thereof, each having between 2-24 carbon atoms, said method comprising

contacting said primary and the at least one secondary comonomers in the presence of a copolymerization initiator in an aqueous medium having a pH of between 5 and 11 at a temperature and time sufficient to copolymerize the comonomers and form a linear, random copolymer, and contacting said linear, random copolymer with a buffer.

9. (Original) The method of claim 8, wherein the primary comonomer is acrylamide and the at least one secondary comonomer is dimethylacrylamide.

10. (Original) The method of claim 8, wherein the ratio of reactivity of the at least one secondary comonomer to said primary comonomer is between 0.3 and 2.0.

11. (Original) The method of claim 8, wherein said gel matrix further comprises a buffer having a pH between 5 and 11.

12. (Original) The method of claim 8, wherein said gel matrix has a viscosity between 100 and 50,000 Cp.

13. (Original) The method of claim 8, wherein said at least one linear random copolymer has a molecular weight between 100,000 and 5,000,000 Daltons.

14. (Original) A capillary tube filled with an electrophoresis separation medium comprising gel matrix of at least one random, linear copolymer comprising a primary comonomer and at least one secondary comonomer, wherein the comonomers are randomly distributed along the copolymer chain, wherein

the primary comonomer is acrylamide, and

the at least one secondary comonomer comprises one from the group consisting of vinyl monomers, monomers of acrylamide derivatives, monomers of acryloyl derivatives, monomers of acrylic acid derivatives, monomers of polyoxides, monomers of polysilanes, monomers of polyethers, monomers of derivatized polyethylene glycols, monomers of cellulose compounds, or mixtures thereof, each having between 2-24 carbon atoms.

15. (Original) The capillary tube of claim 14, wherein the primary comonomer is acrylamide and the at least one secondary comonomer is dimethylacrylamide.

16. (Original) The capillary tube of claim 14, wherein the ratio of reactivity of the at least one secondary comonomer to said primary comonomer is between 0.3 and 2.0.

17. (Original) The capillary tube of claim 14, wherein said gel matrix further comprises a buffer having a pH between 5 and 11.

18. (Original) The capillary tube of claim 14, wherein said gel matrix has a viscosity between 100 and 50,000 Cp.

19. (Original) The capillary tube of claim 14, wherein said at least one linear random copolymer has a molecular weight between 100,000 and 5,000,000 Daltons.

20. (Original) A method of separating a mixture of biological molecules within an electrophoretic separation medium comprising:

a) placing into a support a gel matrix of at least one random, linear copolymer comprising a primary comonomer and at least one secondary comonomer, wherein the comonomers are randomly distributed along the copolymer chain, wherein

the primary comonomer is acrylamide, and

the at least one secondary comonomer comprises one from the group consisting of vinyl monomers, monomers of acrylamide derivatives, monomers of acryloyl derivatives, monomers of acrylic acid derivatives, monomers of polyoxides, monomers of polysilanes, monomers of polyethers, monomers of derivatized polyethylene glycols, monomers of cellulose compounds, or mixtures thereof, each having between 2-24 carbon atoms.

b) adding the mixture of biological molecules to the electrophoretic separation medium at one end of the support; and

c) applying an electric field to the medium in an amount sufficient to facilitate the migration and separation of the biological molecules.

21. (Original) The method according to claim 20, wherein the primary comonomer is acrylamide and the at least one secondary comonomer is dimethylacrylamide.

22. (Original) The method according to claim 20, wherein the ratio of reactivity of the at least one secondary comonomer to said primary comonomer is between 0.3 and 2.

23. (Original) The method according to claim 20, wherein said gel matrix further comprises a buffer having a pH between 5 and 11.

24. (Original) The method according to claim 20, wherein said gel matrix has a viscosity between 100 and 50,000 Cp.

25. (Original) The method according to claim 20, wherein said at least one linear random copolymer has a molecular weight between 100,000 and 5,000,000 Daltons.

26. (New) An electrophoresis separation medium comprising a gel matrix of at least one random, linear copolymer comprising a primary comonomer and at least one secondary comonomer, wherein the comonomers are randomly distributed along the copolymer chain, and wherein

the primary comonomer is one from the group consisting of acrylamide, N-methylacrylamide, and N-ethylacrylamide; and

the at least one secondary comonomer is dimethylacrylamide.

27. (New) An electrophoresis separation medium comprising a gel matrix of at least one random, linear copolymer comprising a primary comonomer and at least one secondary comonomer, wherein the comonomers are randomly distributed along the copolymer chain, and wherein

the primary comonomer is one from the group consisting of acrylamide and acrylamide derivatives other than dimethylacrylamide; and

the at least one secondary comonomer is dimethylacrylamide.